

RIC 2006
Session W4F
Current Seismic Issues & Associated Research
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Insights Into Tsunami Hazards

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Discussion Topics

- Experience from three case studies
- Tsunami Sources
 - Hokkaido-Nansei-Oki, Japan Near-Source 1993 M_w 7.8
 - Aceh, Sumatra Near-Source 2004 M_w 9.2
 - Madras, India Distant Tele-Tsunami 2004 M_w 9.2

OKUSHIRE ISLAND



OKUSHIRE ISLAND



Tomari Power Plant - Hokkaido , Japan

July 12, 1993 M 7.8 Tsunami Impact



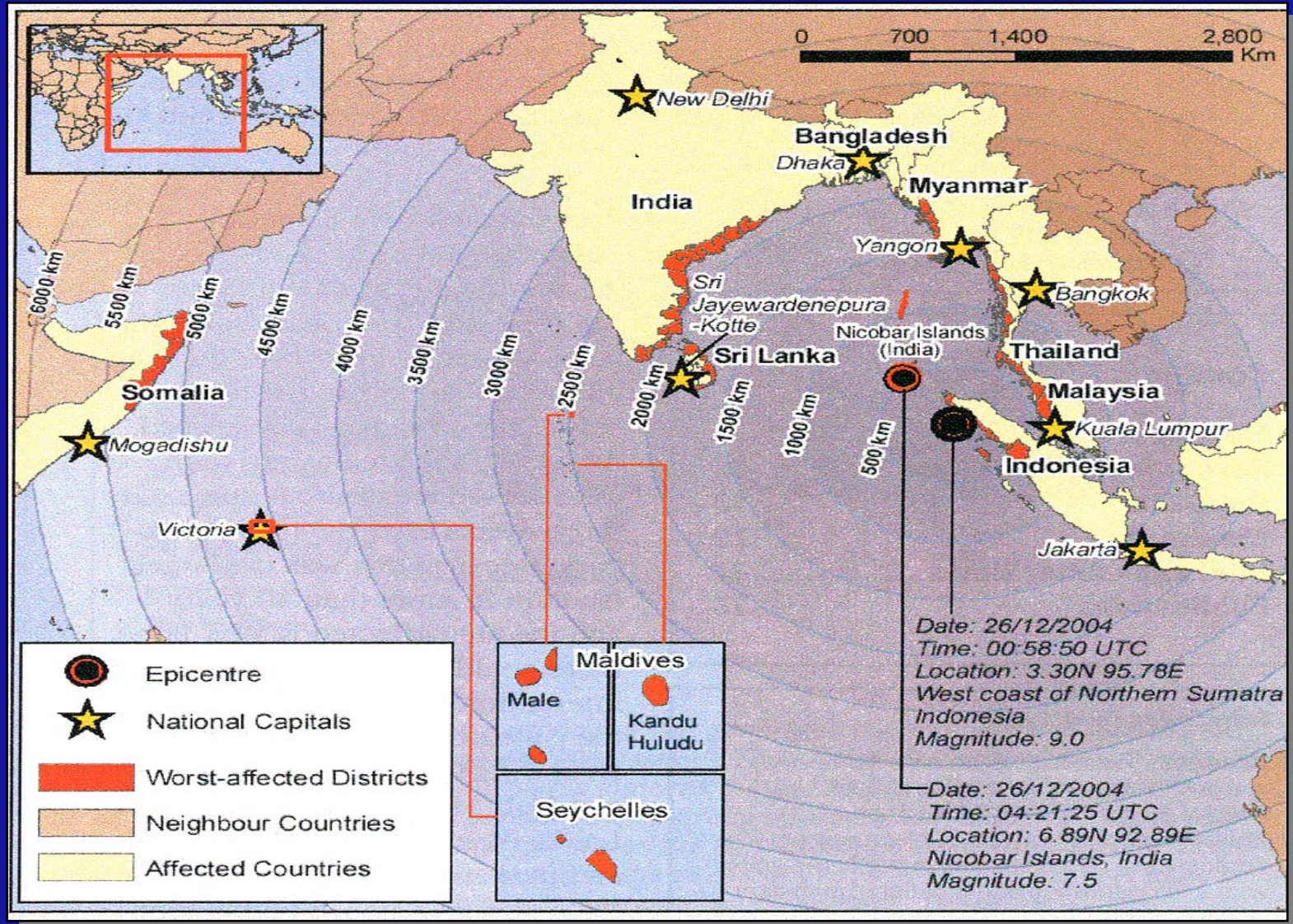
Stream Channel Focused Tsunami Run-up 35.5 M



Sumatra Tsunami Impact



Areas Affected by the Tsunami of December 26, 2004



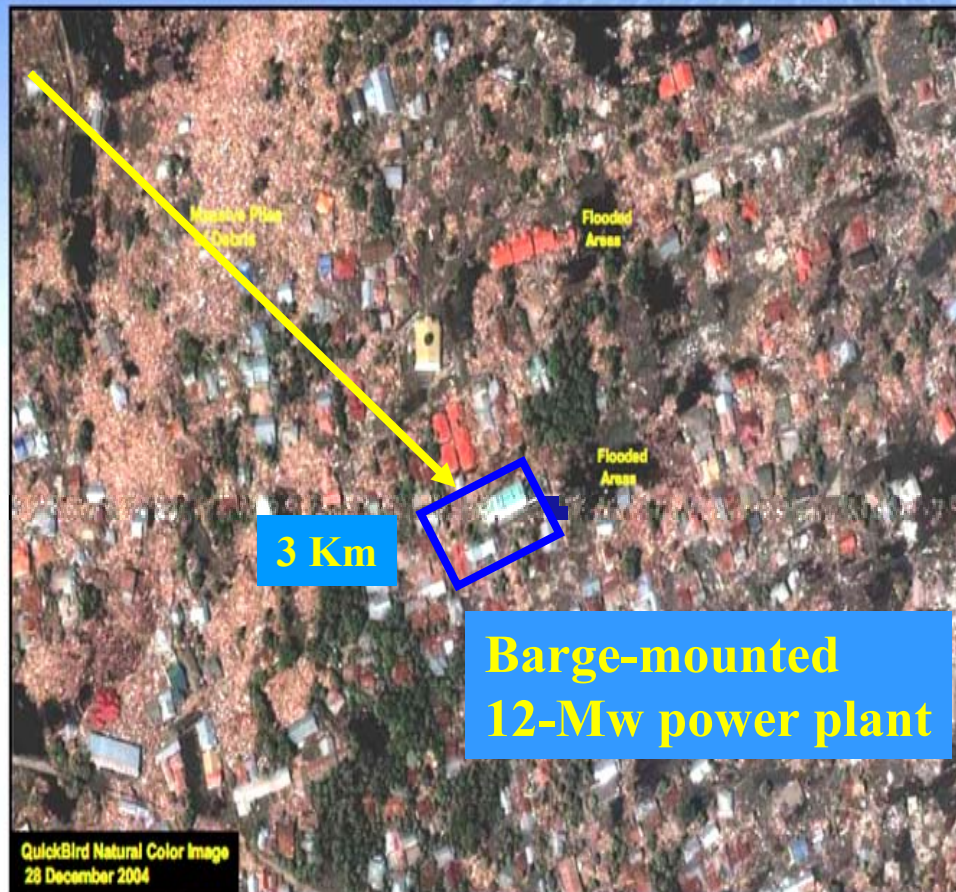
Banda Aceh Tsunami Impact



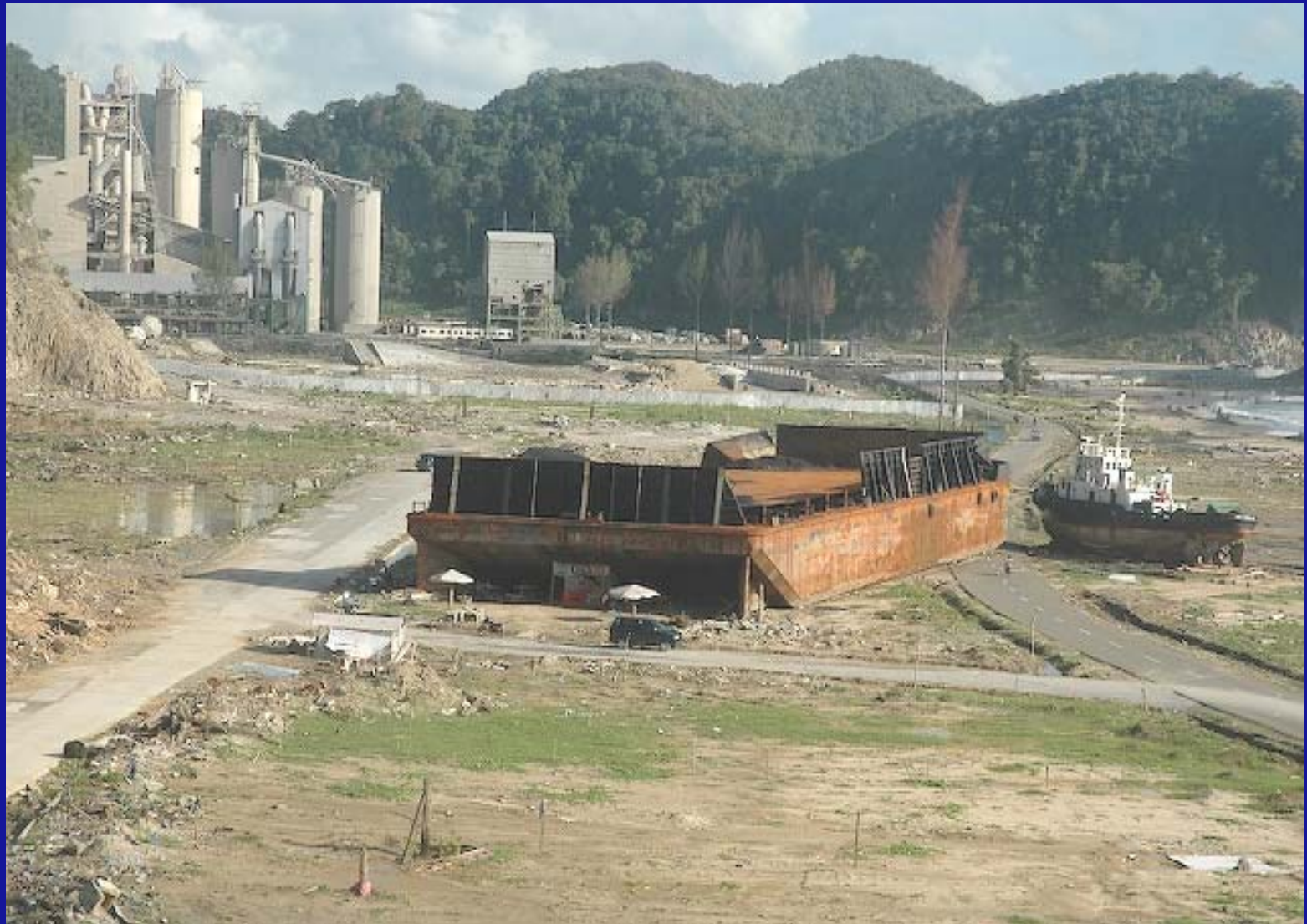
Tsunami Flow Height



DIGITALGLOBE® **Banda Aceh: After the Tsunami**



La Farge Cement Plant



La Farge Cement Plant



Petroleum Storage Facilities



Well Designed Buildings Survived



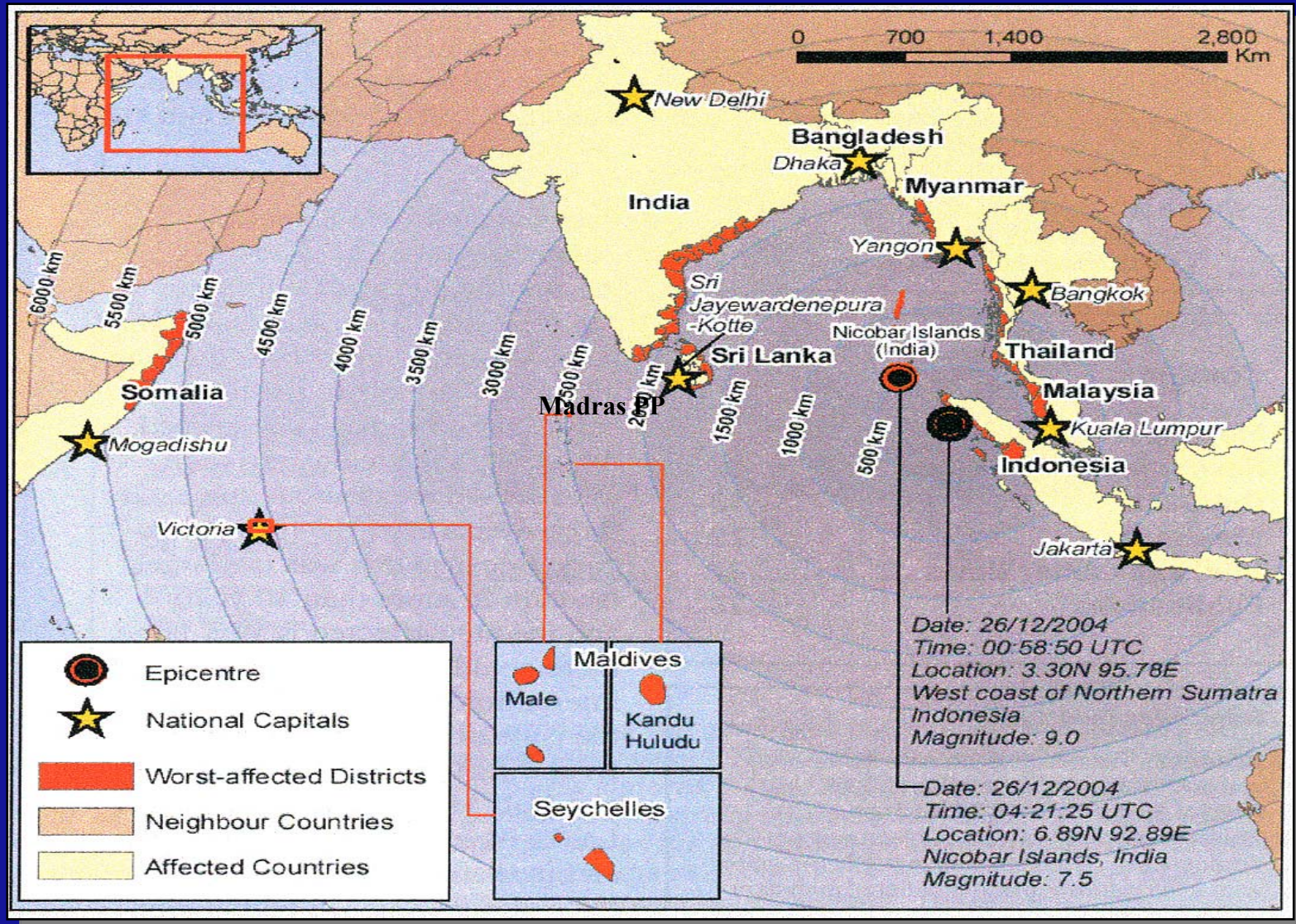
Steel-Frame Structures Survived with out Structural Damage Tsunami 35 M high



General Summary of Tsunami Impacts in Sumatra

- **Tsunami impacts to Sumatra were devastating**
- **Almost all routinely constructed houses and buildings destroyed (obliterated) by tsunami impacts**
- **Almost all well designed and constructed houses, buildings, and industrial facilities survived tsunami impacts with only minor structural damage**
- **Flooding of all houses, buildings, and industrial facilities caused minor to severe damage**
- **Almost all people not able to escape tsunami impact perished (180,000 plus in Sumatra) some miraculously escaped with minor injuries**

Areas Affected by the Tsunami of December 26, 2004



Tsunami Hazard Assessment

Scope of Activities and Research Needs

- **Tsunami Sources**

 - Tele-Tsunami**

 - Regional**

 - Local**

- **Bathymetry**

- **Landslide Sources**

- **Tsunami Wave Height and Run-Up Modeling**

- **Empirical Data**